Symposium on Jet and Electromagnetic Tomography of Dense Matter

LBNL, June 18, 2010

Formation of

Jet and Electromagnetic Tomography

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Once upon a time .....

NSAC Theory Subcommittee (2002)

Mueller Report (arXiv:nucl-th/0311056)

Proposed new initiatives:

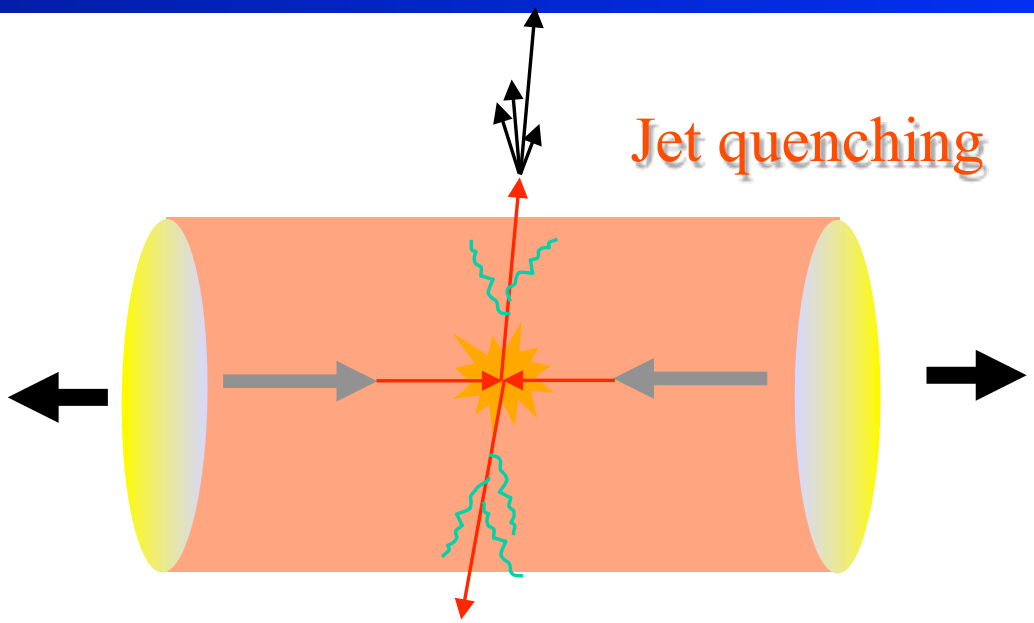
- Establishment of prize fellowships for postdoctoral researchers;
- Establishment of a fellowship program for graduate education;
- An increase in the funding level of Outstanding Junior Investigator awards;
- Establishment, by competitive bid, of Topical Centers with a specific programmatic thrust;
- Establishment, by competitive bid, of Centers of Excellence with generally interdisciplinary breadth;
- Investment in state-of-the-art computing facilities for lattice gauge theory, supernova simulations, and other CPU-intensive computational efforts.

2003-2009

A long waiting period

(2006: LOI from LBNL for a topical center on The Study of Hard Probes in High Energy Heavy-ion Collisions)

Hard Probes of Dense Matter

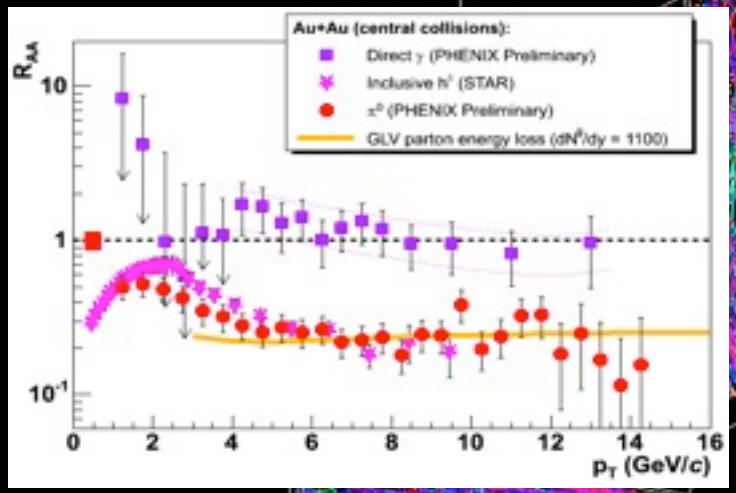


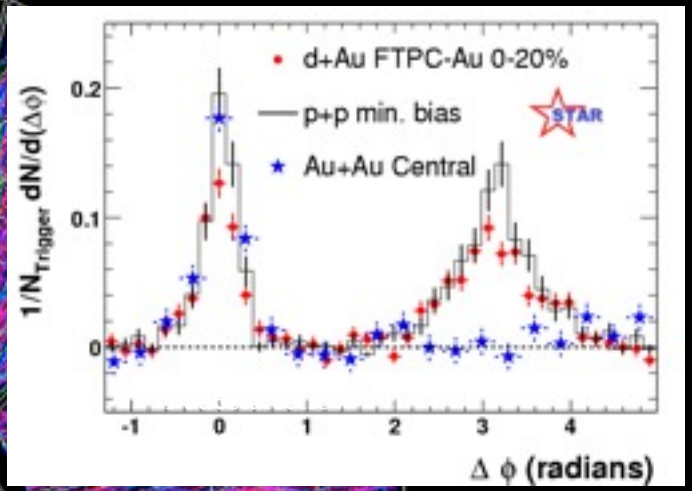
- Probe early stage of dense matter
- pQCD well established tool

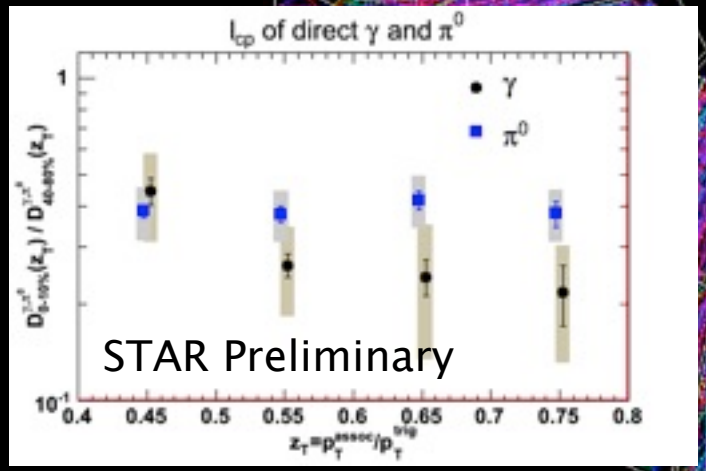
Hard Probes Collaboration (1994-2002)

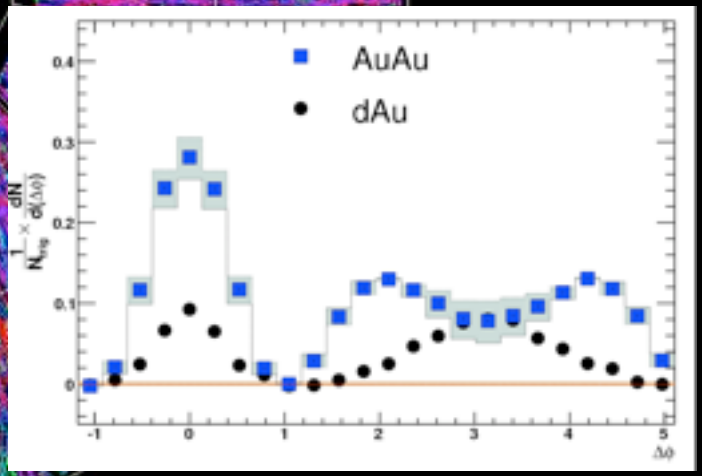
http://www-nsdth.lbl.gov/hpc/

Jet Quenching phenomena at RHIC

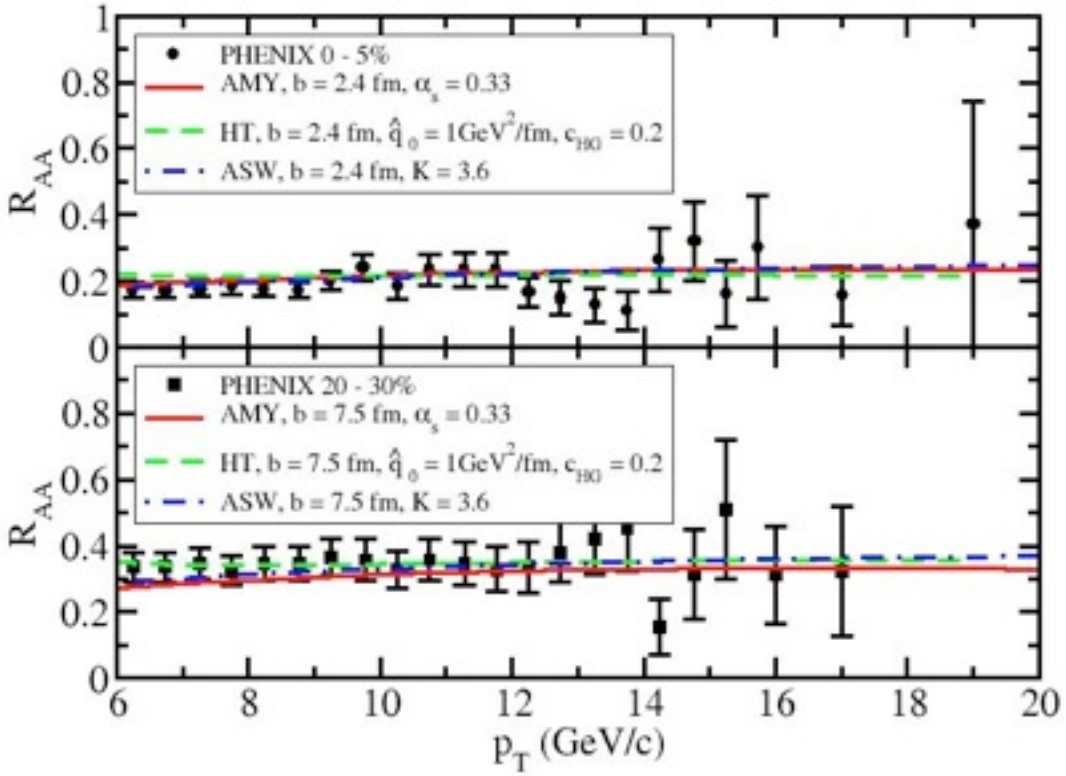








Beyond discovery phase



Bass et al'08

TECH-QM

$$\hat{q}_0 \tau_0 \approx 1-5 \ \mathrm{GeV}^2 / fm$$

Cold nuclear matter in DIS

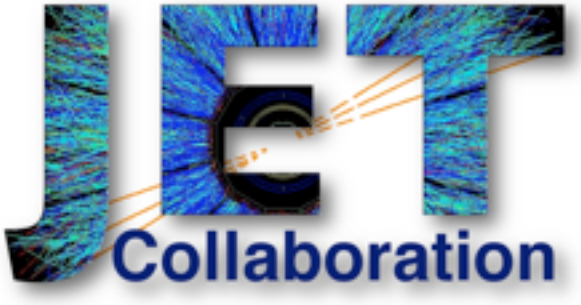
$$\hat{q}_N \approx 0.01 \ \mathrm{GeV}^2 / fm$$

Wang & XNW'01

jet.lbl.gov

Call for proposal for topical collaboration from DOE (May, 2009)

Selected by DOE December 2009



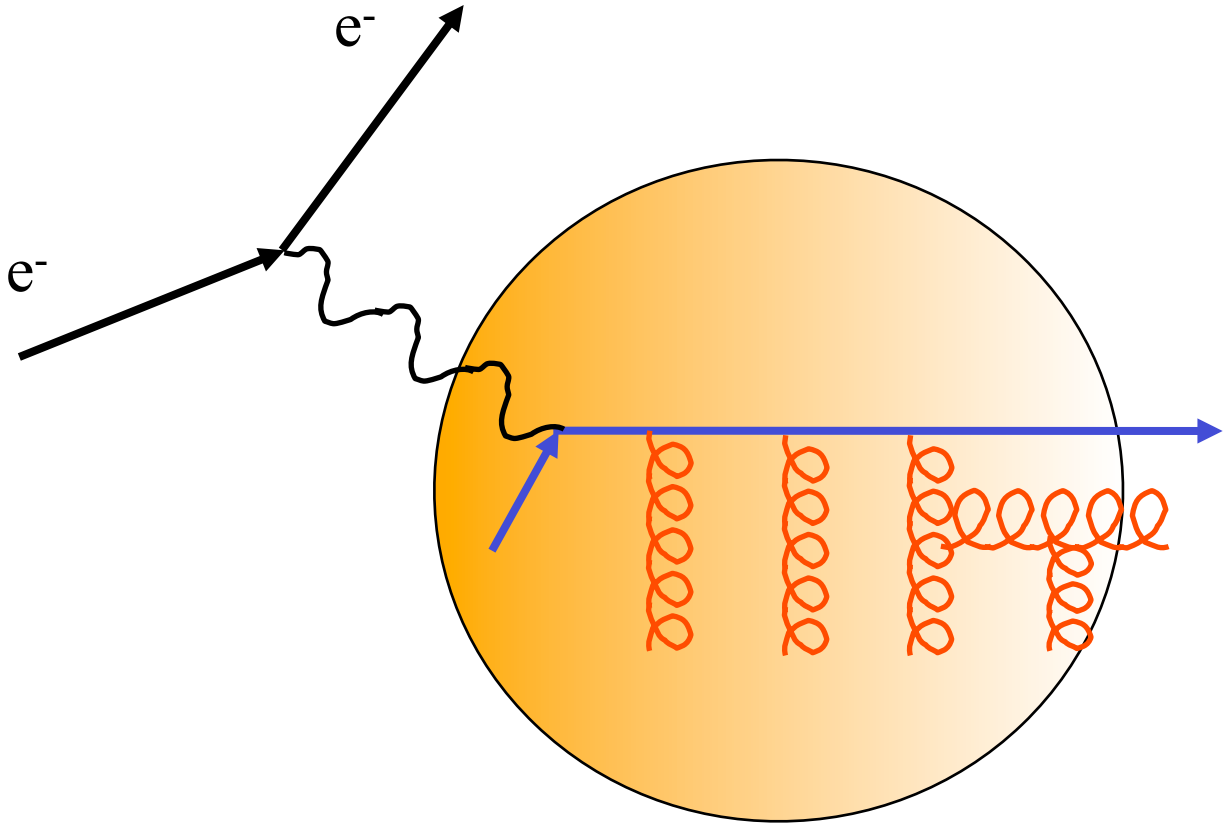
15 co-PIs, 20 Associated Members, $5M for 5 years

Quantify properties of QGP probed by Jet and Electromagnetic Tomography

- Beyond soft and collinear approximation
- Monte Carlo for jet evolution in medium
- Space-time evolution of bulk medium
- Phenomenological study

JET Collaboration

Beyond soft & collinear approximation



Matching hard and collinear radiation

JET Summer Program 2010

- JET Summer School (June 13-17) (60 participants)
- JET Inaugural Symposium (June 18)
- First Collaboration meeting (June 19-20)